

We claim:

1. A method of marking a data disc product comprised of polycarbonate material and storing data thereon, the method used for tracking purposes to inhibit at least one of piracy, unauthorized access and unauthorized copying of the data stored on the data disc product, said method comprising the steps of:

(a) introducing at least one predetermined tracing substance as a predetermined marking in the polycarbonate material of the data disc product in quantities that will not adversely effect at least one of performance, structure of, and the data stored on, the data disc product; and

(b) manufacturing the data disc product with the at least one predetermined tracing substance introduced therein in said introducing step (a).

2. A method according to claim 1, wherein said introducing step (a) further comprises the step of introducing the at least one predetermined tracing substance as a security marking in the polycarbonate

material including predetermined concentration amounts of at least one of an isotope, a plurality of isotopes and a plurality of stable isotopes.

5 3. A method according to claim 1, wherein the at least one predetermined tracing substance comprises at least two predetermined tracing substances, and wherein said introducing step (a) further comprises the step of introducing the at least two predetermined tracing substances as a security marking in the polycarbonate material including predetermined concentration amounts of at least one of an isotope, a plurality of isotopes and a plurality of stable isotopes.

15 4. A method according to claim 1, further including a step of identifying by inspecting the data disc product the at least one tracing substance for tracking purposes to inhibit at least one of piracy, unauthorized access and unauthorized copying of the data stored on the data disc product.

5           5.    A method according to claim 2, further  
including a step of identifying by inspecting the data  
disc product the at least one tracing substance  
including the predetermined concentration amounts of  
the at least one of the isotope, the plurality of  
isotopes and the plurality of stable isotopes for  
tracking purposes to inhibit at least one of piracy,  
unauthorized access and unauthorized copying of the  
data stored on the data disc product.

10           6.    A method according to claim 2, further  
including a step of identifying by inspecting the data  
disc product the at least one tracing substance  
responsive to a ratio of concentration amounts in said  
data disc product, for tracking purposes to inhibit at  
15   least one of piracy, unauthorized access and  
unauthorized copying of the data stored on the data  
disc product.

7.    A method according to claim 1, wherein the at  
least one tracing substance comprises a transparent

oxide of at least one of a silicate, a lead dioxide, tin, cadmium 12 and iridium 5, or combination thereof.

5 8. A method according to claim 1, wherein said manufacturing step (b) further comprises the step of manufacturing the data disc product with a non-chemically reactive metalized glare that provides stable, reliable and repeatable performance over a substantial period of time.

10 9. A method according to claim 4, 5 or 6, wherein said identifying step further comprises using at least one of mass spectrometry, neutron absorption and neutron spectrometry techniques.

15 10. A method according to claim 1, further including a step of attributing distribution of the at least one data disc product to a manufacturer such that identification of said at least one tracing substance in said data disc product indicates whether the manufacturer is an authorized manufacturer.

5 11. A method according to claim 1, further including a step of storing, in a database on a computer-readable medium, identity characteristics corresponding to the predetermined marking of each data disc product, and accessing said database to compare the predetermined marking with the identity characteristics to determine a match therefor.

10 12. A method according to claim 1, wherein the predetermined marking is indicative of product information including at least one of a lot number, batch number, shipper, recipient, shipping date, manufacturer identity, manufacturing date and designated product purpose.

15 13. A method according to claim 2, wherein the data includes information on at least one of a music originator, a music title, and group of titles.

14. A method according to claim 1, wherein the predetermined marking is substantially transparent.

15. A method of marking a protective layer of a product at least one of comprised of and including a portion of polymer, said method used to track said product and inhibit at least one of piracy, unauthorized access and unauthorized copying of said product, said method comprising the steps of:

(a) introducing at least one predetermined tracing substance as a predetermined marking in the polycarbonate material of the protective layer of the product in quantities that will not adversely effect at least one of performance, structure of, and the data stored on, the product; and

(b) manufacturing the product with the at least one predetermined tracing substance introduced therein in said introducing step (a).

16. In a security marking method for marking a polycarbonate-based product to prevent at least one of piracy, unauthorized access and unauthorized copying of said product, a data disc impregnated with at least one predetermined tracing substance providing the security marking used for at least one of tracking and

5 authenticating said data disc, the at least one  
predetermined tracing substance including predetermined  
concentration amounts of at least one of an isotope, a  
plurality of isotopes and a plurality of stable  
isotopes, and the predetermined tracing substance  
indicative of product information including at least  
one of a lot number, batch number, shipper, recipient,  
shipping date, manufacturer identity, manufacturing  
date and designated product purpose.

10 17. A system of marking a protective layer of a  
product at least one of comprised of and including a  
portion of polymer, said system used to track said  
product and inhibit at least one of piracy,  
unauthorized access and unauthorized copying of said  
15 product, comprising:

20 means for introducing at least one predetermined  
tracing substance as a predetermined marking in the  
polycarbonate material of the protective layer of the  
product in quantities that will not adversely effect at  
least one of performance, structure of, and the data  
stored on, the product; and

means for manufacturing the product with the at least one predetermined tracing substance introduced therein by said means for introducing.

5 18. A system of marking a product at least one of comprised of and including a portion of polymer, said system used to track said product and inhibit at least one of piracy, unauthorized access and unauthorized copying of said product, comprising:

10 a substance introduction system introducing at least one predetermined tracing substance as a predetermined marking in the polycarbonate material of the product in quantities that will not adversely effect at least one of performance, structure of, and the data stored on, the product; and

15 a product manufacturing system, operatively connected and structurally responsive to said substance introduction system, and manufacturing the product with the at least one predetermined tracing substance introduced therein by said substance introduction  
20 system.



19. A system of marking a protective layer of a data disc product at least one of comprised of and including a portion of polymer, said system used to track said data disc product and inhibit at least one of piracy, unauthorized access and unauthorized copying of said data disc product, comprising:

a substance introduction system introducing at least one predetermined tracing substance as a predetermined marking in a polycarbonate material of the data disc product in quantities that will not adversely effect at least one of performance, structure of, and the data stored on, the data disc product; and a product manufacturing system, operatively connected and structurally responsive to said substance introduction system, and manufacturing the data disc product with the at least one predetermined tracing substance introduced therein by said substance introduction system.

20. A method for authenticating a data media storing data in order to prevent at least one of piracy, unauthorized access and unauthorized copying of

5 said data media, wherein said media is impregnated with at least one predetermined tracing substance including a predetermined concentration of at least one of an isotope, a plurality of isotopes and a plurality of stable isotopes, to form at least one security marking used for at least one of tracking and authenticating said data media, said method comprising the steps of:

- 10 (a) detecting the at least one security marking in said data media;
- (b) authenticating said data media responsive to said detecting step (a) using the at least one security marking; and
- 15 (c) outputting said data stored on said data media as at least one of audio, video, audio data, video data and digital data substantially free of said at least one security marking when the data media has been successfully authenticated by said authenticating step (b).

20 21. The authenticating method according to claim 20, and further including the step of authenticating said data media via at least two different security

markings, each of which successively must be authenticated before said data is finally output via said outputting step (c).

5 22. The authenticating method according to claim 20, and further including the step of authenticating said data media over a plurality of interconnected computer networks comprising at least one of a local network, global network and Internet.

10 23. In a security marking method for marking a polycarbonate-based product to inhibit at least one of piracy, unauthorized access and unauthorized copying of said product, a data disc impregnated with at least one predetermined tracing substance providing the security marking used for at least one of tracking and  
15 authenticating said data disc, the at least one predetermined tracing substance including predetermined concentration amounts of at least an isotope, a plurality of isotopes and a plurality of stable isotopes, and the predetermined tracing substance  
20 indicative of product information including at least

one of a lot number, batch number, shipper, recipient, shipping date, manufacturer identity, manufacturing date and designated product purpose.

5 24. In a security marking method for marking a polycarbonate-based product to inhibit at least one of piracy, unauthorized access and unauthorized copying of said product, a data message impregnated with at least one predetermined tracing substance providing the security marking used for at least one of tracking and authenticating said data message, the at least one predetermined tracing substance including predetermined concentration amounts of at least an isotope, a plurality of isotopes and a plurality of stable isotopes, and the predetermined tracing substance  
10 indicative of product information including at least one of a lot number, batch number, shipper, recipient, shipping date, manufacturer identity, manufacturing date and designated product purpose.  
15